

## **SCIENTIFIC CERTIFICATION SYSTEMS' CERTIFIED ECO-PROFILE LABELING SYSTEM**

### **Introduction**

Scientific Certification Systems's (SCS) Certified Eco-Profile Labeling System is a third-party, neutral declaration of environmental performance of a product. It is designed to help "managers, design engineers, purchasing agents, retail and industrial customers, and policy makers understand the environmental performance of products and materials to make better informed decisions" by conveying the findings of life-cycle assessment (LCA) studies. As part of the Eco-Profile, SCS performs a cradle-to-grave assessment that covers all relevant impacts for each of a product's life-cycle stages: raw material extraction, material processing, manufacturing, distribution, use, and disposal. The results of the assessment are presented quantitatively on the "Certified Eco-Profile," which communicates an overall declaration of the environmental performance of a product or industrial system. The Certified Eco-Profile has both internal and external applications. When used as a product label, the eco-profile has often been referred to as the environmental equivalent of a nutritional label. Based on the life-cycle assessment, special claims of achievement may also be certified. These claims include "Certified Environmental State-of-the-Art," "Certified Environmental Improvements," and "Certified Environmental Advantages." At the present time, the results from the Eco-Profile and an accompanying report are used primarily at the industrial level to communicate environmental performance data and to provide a tool that can be used to improve manufacturers' processes from an environmental standpoint. SCS is currently engaged in several assessment projects at both the domestic and international levels. SCS expects that in early 1998, many new products will carry the Eco-Profile on their labels. Several products that are currently in the marketplace carry an older version of the Eco-Profile (see "Recent Developments").

### **Recent Developments**

The Certified Eco-Profile Labeling System evolved from SCS's Environmental Report Card, which was introduced in 1993. The Report Card provided a quantified summary of the resources used and emissions associated with a product system. The Certified Eco-Profile, in contrast, is based on a more advanced form of LCA that goes a step further to link the quantified resources and emissions of a product back to the specific environments where releases occur. Both the Report Card and the Certified Eco-Profile have consumer and industrial applications (e.g., internal company communications and industry-to-industry communications), but currently, demand for the Certified Eco-Profile is primarily at the industrial level. The name was changed because "Eco-Profile" is more consistent with the methodology. SCS believes that the name "Eco-Profile" is easier than "Report Card" to translate, and is more compatible with international terminology.

## Program Summary

Through the Certified Eco-Profile Labeling System, SCS assesses an industrial product material. SCS is engaged in projects in several industries, chosen on the basis of industry interest and demand. The products and services currently being assessed include: building materials, energy production systems, textiles and apparel, forest products, steel products, glass, household appliances, telecommunications equipment, paints, and plastics.

The assessment process consists of several phases. SCS meets with the client to set the parameters of the study, then conducts primary and secondary research, including collecting information and data from the manufacturing process, vendors, and suppliers. SCS processes the data, identifying and quantifying the system resources used and emissions which impact the environment. SCS then develops a quantitative profile of these impacts.

The results are presented in a detailed report for the client that is accompanied by a “Certified Eco-Profile Executive Summary and Data Sheet” (ES/DS), and a “Certified Eco-Profile.” The report and ES/DS detail these findings for each unit process in the life-cycle. This includes a detailed description of the study boundaries, an explanation of the production process, a summary of key findings as illustrated on the Certified Eco-Profile, details of these findings for each unit process in the product life cycle, an explanation of any significant environmental achievements, and an illustration on how the production system studied compares to similar systems. The results presented on the Certified Eco-Profile summarize the net resources depleted and the effective emission loadings on the environment under a set of 15-20 core “environmental impact indicators” that reflect the unique system being studied. The Certified Eco-Profile also indicates when there are no measured indicator values above internationally recognized thresholds. The Certified Eco-Profile could be affixed to a retail product or used internally by a company as an environmental management tool. One of three claims of environmental achievement based on the assessment may be certified:

**Environmental State-of-the-Art:** Earned by a product performing in the top 20th percentile in its product category for all significant environmental indicators.

**Environmental Improvements:** Earned by products with demonstrated environmental performance improvements over time.

**Environmental Advantages:** Indicates key advantages (and trade-offs) when comparing the product evaluated to another product or material that can perform the same function.

As in all LCA studies, resource consumption and emissions data are collected for each “life-cycle” stage studied. SCS employs a methodology known as life-cycle stressor-effects assessment (LCSEA), which goes beyond traditional LCA practice by integrating environmental data in order to characterize the actual environmental significance of the inventory data. This process was

selected because SCS felt that it provides a more scientifically accurate and objective measure of environmental performance. The ES/DS, mentioned above, presents the streamlined life-cycle stressor-effects assessment inventory data as well as the final LCSEA impact indicator values. It shows the relative contribution of specific unit operations to the cumulative environmental indicator values, and shows the relationship between the original inventory values and the final indicator values. Of SCS's current projects, a portion use LCSEA, but all future projects intended for a consumer audience will use LCSEA.

SCS describes five features of the Certified Eco-Profile Labeling System as follows:

1. The system is a comprehensive and science-based system. Findings from the life-cycle are presented in an understandable and usable label format, both in numeric and graphic form. The findings are listed under global, regional and local environmental indicators that are relevant to the system studied.
2. The system provides a level playing field for comparative assessment. The LCA methodology provides a uniform foundation for product assessment, and helps to ensure that fair comparisons can be made among products.
3. The system records the unique environmental "footprint" of each product. The eco-profiles of similar products may differ greatly, depending on the source of its natural resources, the manner in which such resources are extracted, differences in production technologies used, emissions released, and the relative tolerance of the environment into which these emissions are released.
4. The system documents current practices and environmental achievements, and gives companies information that allows them to determine where improvements are most needed.
5. The system is applicable to all markets and avoids trade barriers because it is a site-specific declaration of actual environmental performance, and does not have restrictive criteria and standards that could reflect local and national priorities. It is directly translatable in all countries and markets.

The typical LCSEA study, including the production of a full life-cycle report, the Executive Summary and Data Sheet, and the Certified Eco-Profile, costs between \$15,000-\$50,000. There are no licensing or annual fees, and maintenance fees are minor.

### **Program Methodology**

SCS performs a life-cycle stressor-effects assessment (LCSEA), which is a form of LCA developed for use in the evaluation of product's environmental performance evaluation and labeling. It is a cradle-to-grave assessment that covers all relevant impacts for each of a product's life-cycle stages: raw material extraction, material processing, manufacturing, distribution, use, and disposal. The LCSEA methodology has a number of key features. First, it maintains simplified data treatment: inventory data are not aggregated in order to maintain data characteristics of time and space.

Second, it incorporates environmental data from the “providing” environments (i.e., the source of material inputs) and the “receiving” environments; third, recognized threshold levels are used to determine whether an emission is causing a measurable effect; and finally, it models the environmental mechanism through defined stressor-effects (i.e., cause and effect) networks that link specific system inputs, outputs or activities (i.e., the “stressors”) to model actual impacts on the environment. The system presents results from the assessment in two broad categories of environmental indicators:

1. Net Resources Depleted includes the following indicators: water, wood fiber, fossil fuels, non-fuel oil and gas, minerals, metals, direct land area, and marine resources.
2. Emission Loadings includes the following indicators: greenhouse gases, acidifying chemicals, ground level ozone, stratospheric ozone-depleting substances, hazardous air pollutants, noise, eutrophication chemicals, total oxidizable organic carbon, total suspended solids, hazardous water pollutants, and hazardous waste.

Eco-Profile studies are conducted when individual companies and industry groups come forward with interest and demand. Information for each study is collected from sources including primary data from participating companies and suppliers, published and unpublished data from LCA studies, environmental impact assessment and risk assessment studies, government statistics, and industry sources. Each project is peer reviewed and opportunities for input and review by key stakeholders are provided. SCS conducts site-specific impact assessments, recognizing local, national, and global conditions. The methodology for the Certified Eco-Profile goes beyond the conventional Life-Cycle Inventory methodology (e.g., such as that put forth by the Society for Environmental Toxicology and Chemistry (SETAC)) to include data pertaining to actual environmental effects. Examples of environmental characterization data collected include: local/regional exposure data; background concentration levels; exceedance of threshold levels by GIS mapping for acidification and ground level ozone formation; composition and structure of floral and fauna types; the size of the reserve base for a given resource; and recycling rates for a given material and the number of times the material is recycled.

## **Other Information**

SCS is involved with the development of ISO 14000 standards for Type III labeling, the category of labeling that includes the Certified Eco-Profile. SCS is also working to harmonize with emerging Type III labeling initiatives being conducted outside of the US, believing in the importance of harmonizing with programs before they are developed. SCS has formed alliances with institutions in Chile, Finland, Sweden, Japan, and Korea to offer LCA and Certified Eco-Profile services worldwide. SCS is also collaborating with two Nordic organizations, the Swedish Environmental Research Institute (IVL) and Soil and Water (the environmental division of Jaakko Pöyry, Finland), to write an LCSEA practitioners’ manual for Type III labeling. The first version (1.2) was released in April 1997, and international stakeholder input is being assembled. The new version will be released in 1998.

The Environmental Work Place Analysis is another LCA based program run by SCS. The program assists companies to incorporate environmental considerations into the overall management strategies. It was designed to educate employees at all levels about the environmental consequences of their actions, and to help employees make good environmental decisions at work. At the same time, it has been used as a tool to document environmental savings and their corresponding cost savings for corporations. Employees complete a questionnaire about job-related activities, and SCS calculates the amount of raw materials and energy used and the amount of pollution and waste generated as a result of these activities. The information is summarized for each employee on “Employee Eco-Profiles,” along with departmental or faculty eco-profiles.

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### **Product Categories**

All product categories